REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

CIP Code: 15.0303

Prefix & Course Number: EET 3630 Crosslisted With*: _____

Course Title: Electromagnetic Fields

Check All That Apply: Required for Major: X Required for Minor: _____ Specified Elective: _____ Required for Concentration: _____ Elective: _____ Service Course: _____

Credit Hours: 3 (3+0)

Total Contact Hours per semester (assuming 15-16 week semester):

Lecture 45 Lab 0 Internship _____ Practicum _____ Other (please specify type and hours): _____

Schedule Type(s): L Grading Mode(s): L

Variable Topics Courses (list restrictions, including the maximum number of hours that can be earned**):

** NOTE: This information must be included in the course description.

Restrictions (Variable Topics Course): _____

Prerequisite(s): EET 3110 and EET 3620 and MTH 2410, with grades of "C" or better

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:

Prerequisite(s): EET 3110 and EET 3620, and MTH 2410, with grades of "C" or better

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Catalog Course Description:
This course covers mathematical concepts of static and dynamic electromagnetic fields. Topics include: planewave propagation in lossless and lossy media, waveguide propagation, and radiation principles.

APPROVED: [Signature]

Department Chair OR Program Director

Date

Dean OR Associate Dean

Date

Associate VP, Academic Affairs

Date

*If crosslisted, attach completed Course Crosslisting Agreement Form
Required Reading and Other Materials will be equivalent to:


**Specific, Measurable Student Behavioral Learning Objectives:**
Upon completion of this course the student should be able to:
1. Explain the fundamental concepts of electromagnetic wave propagation.
2. Use many kinds of waveguides and antennas.
3. Apply electromagnetic field theory to the solution of radio communications problems.

**Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):**

I. Fundamentals of Transmission Lines (review):
   A. Lumped Circuit Theorem
   B. Characteristic Impedance
   C. Attenuation
   D. Dispersion
   E. Reflection
   F. Transmission
   G. Impedance Matching
   H. Standing Wave Ratio
   I. Measurements

II. Mathematics of Fields:
   A. Vector Analysis
   B. Line and Surface Integrals
   C. Scalar and Vector Fields

III. Statics:
   A. Electric Fields
   B. Magnetic Fields

IV. Electrodynamics and Maxwell's Equations

V. Plane Waves:
   A. Reflection
   B. Refraction
   C. Transmission
   D. Lossy Media

VI. Guided Waves:
   A. Transmission Lines
   B. Hollow Metal Waveguides
   C. Optical Filters

VII. Antennas:
   A. Sources
   B. Dipoles
   C. Arrays

**Evaluation of Student Performance:**
1. Written exams
2. Written lab reports
3. Computer simulations